

REMARKS

In the foregoing amendments, claims 1-78 are canceled without prejudice, disclaimer, or waiver; and claims 79-114 are added. Claims 79-114 are now pending in the present application.

I. Response to 35 U.S.C. §102 Rejection

Claims 23-27, 29-46, 48-50, and 52-69 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Singh et al.* (U.S. Patent No. 5,635,089). These claims have been canceled by amendment herein, thereby rendering the rejection moot. Concerning the newly added claims, Applicants respectfully assert that *Singh et al.* does not teach each and every element of the claims.

A. Claim 79

Claim 79 is directed to a method that includes providing a substrate and performing a surface-altering process for altering a surface of the substrate. The surface-altering process includes ***“utilizing a partially transmissive mask that allows a fraction of light to pass therethrough.”*** *Singh et al.* teaches a process that does not utilize a mask and explicitly teaches away from such a technique by stating, in col. 3, line 32, that “[m]asking is not necessary...” More specifically, *Singh et al.* fails to disclose utilizing a partially transmissive mask that allows a fraction of light to pass therethrough, as claimed.

B. Claim 104

Claim 104 is directed to a substrate comprising a material selected from a group of materials, and a surface having features formed by the treatment of a surface-altering process that ***“utilizes a partially transmissive mask that allows a fraction of light to pass therethrough.”*** *Singh et al.* does not utilize a mask in a surface-altering process and explicitly teaches away from using a mask by stating, in col. 3, line 32, that “[m]asking is not necessary...” *Singh et al.* also fails to further teach or suggest a partially transmissive mask as claimed.

C. Claim 108

Claim 108 is directed to an apparatus for forming a high surface-area substrate. The apparatus comprises a laser and ***“a partially transmissive mask for reflecting at***

least a portion of the light” from the laser. *Singh et al.* does not utilize a mask and explicitly teaches away from using a mask by stating, in col. 3, line 32, that “[m]asking is not necessary...” Furthermore, *Singh et al.* fails to disclose a partially transmissive mask, as claimed.

Since *Singh et al.* does not teach every element of the independent claims, Applicants assert that these claims are not anticipated by *Singh et al.* A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference disclose each element of the claim. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). For at least these reasons, Applicants respectfully request that the Examiner kindly withdraw the 35 U.S.C. §102(b) rejection.

D. Claims 80-103, 105-107, and 109-114

Dependent claims 80-103, 105-107, and 109-114 are believed to be allowable for at least the reason that these claims depend from allowable independent claims 79, 104, and 108. Furthermore, these claims include additional features that are not disclosed by *Singh et al.* For example, *Singh et al.* fails to disclose a dot grayscale mask, a line-and-space grayscale mask, applying light at a power level that slopes from a minimum power level to a maximum power level, a lithographic process for removing portions of the surface, dry etching, wet etching, exposing a photosensitive substrate to light, irradiating a reactive chemical material with laser light, scanning a laser beam through a plurality of laser masks, chemical roughening, an additive process in which material is added to the surface of the substrate, altering the surface resulting in a surface area that is 1,000 times greater than the initial surface area, etc.

II. Response to 35 U.S.C. §103 Rejection

Claims 77 and 78 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over *Singh et al.* Since these claims have been canceled, this rejection is considered moot. However, concerning the newly added claims, Applicants respectfully traverse the rejection and the statements made in support thereof. First, *Singh et al.* fails to teach or suggest *“utilizing a partially transmissive mask”* as mentioned above.

Also, the Examiner correctly acknowledges that *Singh et al.* does not suggest a 10,000-fold increase [in surface area]. It should also be noted that *Singh et al.* does not suggest a 1,000-fold increase, as claimed in claim 103. Instead, the system of *Singh et al.* appears to be capable of increasing the surface area only up to a factor of 100. *Singh et al.* does not use masking, but applies a number of laser pulses, i.e. as many as 100,000 pulses (see col. 4, lines 6-7). The laser has a particular wavelength, e.g. 193 to 248 nm, pulsed for durations of from 1 picosecond to 1 millisecond, at an energy level of less than 15 J per square cm. However, even with 100,000 pulses, *Singh et al.* only recognizes an increase in the surface area of up to 100. There are no other suggestions in this reference that suggest that the surface area can be increased beyond a factor of 100.

The Office Action states that it would have been obvious to increase the number of pulses (beyond 100,000) to increase the surface area and presumably reach a factor of “at least 1,000” as claimed. However, the prior art does not lead one to believe that such a technique would provide such a result. Without support in the prior art, the statement appears to use hindsight of Applicants’ own invention. In contrast to this statement, applying more than 100,000 pulses in the system taught by *Singh et al.* may actually reduce the surface area by completely “chipping away” high surface-area portions that had already been formed. In this respect, this suggestion, which is not even suggested in the prior art itself, may actually be counterproductive.

Referring to MPEP 706.02(j), three basic criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

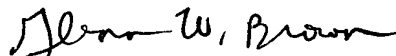
In this case, it would be impossible for the Examiner to use *Singh et al.* to show motivation “to modify the reference” since the reference, or other prior art references, do not teach or suggest such a modification. To draw on hindsight knowledge of the claimed invention, when the prior art does not disclose or suggest that knowledge, is an approach using the invention as a template for its own reconstruction, which would be “an illogical and inappropriate process by which to

determine patentability.” *Sensonic, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996). “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780 (Fed Cir. 1992).

CONCLUSION

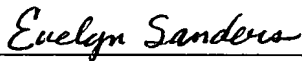
In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 79-112 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned at (770) 933-9500.

Respectfully submitted,


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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on *July 26, 2004*.



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